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ABSTRACT

A tutoring guide prescribing procedures for teaching naming and sounding of letters and decoding of nonsense words was developed. A sample group of kindergarten and first graders was randomly assigned to experimental and control groups. The tutoring guide was distributed to chosen tutors (parents and high-school students). The tutors met with the children about four times a week, 15 minutes in each session, until the child achieved mastery of naming, sounding, and decoding. The tutors received no formal training and the tutoring was supervised. Six weeks later all children were tested individually on specified criteria, and results were analyzed on each of the three skills. It was found that the difference of mean scores between tutored groups and nontutored groups was not significant for naming, but significant at the .01 level for sounding and decoding; the difference of mean scores between the kindergarten and first grade groups was not significant for naming and decoding, but significant at the .01 level for sounding. The study also indicated no significant difference between the mean gain of subjects tutored by parents and those tutored by high-school students. Tables and references are included. (AW)

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A COMPARISON OF THE EFFECTIVENESS OF STRUCTURED TUTORING TECHNIQUES AS USED BY PARENTS AND PAID STUDENT TUTORS IN TEACHING BASIC READING SKILLS

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STATEMENT OF PROBLEM

At the primary grade level one of the most difficult tasks children are required to master is reading. The process of reading is complex and consists of numerous sub-skills, any one of which can become a major stumbling blcok for a child. Many writers assume that identification skills are an important aspect of reading mastery. For example, in a summary of reading success studies, Durrell (1958) indicates that: "Most reading difficulties can be prevented by an instructional program which provides early instruction in letter names and sounds, followed by applied phonics and accompanied by suitable practice in meaningful sight vocabulary and aids to attentive silent reading" (p. 5). Each of these specified competencies (naming, sounding, decoding sight words) requires drill and practice for acquisition. Because of the time restraints of classroom teachers it is not often possible for the teacher to provide the kind of extensive individual drill and practice that a particular child may need. Consequently many children are lacking in skills prerequisite to the total act of reading.

Cost restraints make it prohibitive to even consider having enough teachers to insure that children with problems will receive enough individualized help to provide mastery of basic reading skills. It is necessary, therefore, to look in other directions to provide readiness skills and remedial skills for children in the schools. In an earlier paper (Keele and Harrison, 1971) the authors have reported that it is feasible to utilize adults other than teachers as tutors to help primary grade children with individual drill and practice in the skills of naming and sounding letters and decoding phonetic words. It was reported that parents can be effective agents in teaching these prerequisite skills.

The purpose of this paper is to report on a comparison of the effectiveness of parental tutors and paid high school tutors.

PROCEDURES

Developing Materials

A tutor guide was developed for adult tutors that prescribed validated procedures for teaching the names of the letters, the sounds of the letters, the decoding of nonsense words. The manual teaches the use of established principles of learning (maintaining a calm atmosphere, rehearsing the task with the child, consistently praising the child, never punishing the child, establishing reward systems, providing immediate feedback) and specific techniques for teaching sounds, letters, and decoding. The manual is designed to teach all letters and sounds, but was adapted for the specific letters and sounds to be used in this study. Based on the materials being used for reading in the school, we selected the letters a, i, f, m, n, and s for the kindergarten children and the same letters plus v and z for the first graders to master. The sounds selected included those for the letters above (short a and i),the sh for kindergarten and th for the first graders.

Selection of Subjects

After the production of the training materials all the kindergartners and first graders in one school in the area were tested, using a criterion test based on the desired objectives. After pretesting all the children in the two grades, a sample group was established.

For the first grade the population was considered to be all children who missed at least four of the ten sounds designated for the study, and

at least four of ten nonsense words. In the kindergarten all children were possible subjects because none could name more than four sounds and none could decode any words.

From this pool of children the experimental groups and controls were randomly assigned. Parents of subjects were then called to either tutor or to allow a student to tutor their child. Two parents chose not to tutor, and two others were randomly chosen. Three parents chose not to have the child tutored, and three replacements were chosen randomly.

Selection of Student Tutors

At this point an advertisement was placed in the local newspaper requesting response from high school students living in the immediate area of the school, who were willing to work for $1.25 an hour for approximately four to six weeks. Over fifty calls were received. From this pool twenty tutors were selected. The only considerations for selections were availability of transportation and time over the period of the study. There was no attempt to obtain grade point averages or consider other factors. The average age of the tutors was 16.

Orientation

The manual was distributed to the individuals who would be tutoring, with instructions to read it thoroughly before the orientation meeting which was held three days later at the school the children attended. The students and parents met with Dr. Harrison and a graduate assistant for about one and one-half hours, during which time their questions about the manual were answered.

They were given a kit consisting of preprinted letters appropriate to the criteria for first grade or kindergarten, and the tutor log in which they were to record what was done in each session with the child. Both

parents and tutors were encouraged to work with the children about four times a week for approximately fifteen minutes in each session until the child achieved mastery of naming, sounding, and decoding. From the meeting on they worked individually with the children.

They were free to call upon either of the authors to receive answers to questions, but in all other aspects their tutoring was unsupervised and they were not given formal training. This is in contrast to previous uses of structured tutoring, where there has been systematic instruction in the techniques.

Posttests

After six weeks the children being tutored and the controls were tested individually at the school on each of the specified criterion. The pre- and posttesting was done by undergraduate university students, who received training in the recording and administering of the tests.

For a child to achieve criterion in decoding he was expected to be able to blend at least eight out of ten unfamiliar nonsense words of three or four letters composed of the sounds he had studied. Nonsense words were used to insure that the child could indeed blend and that the word was not part of his sight vocabulary. The training materials included specific instructions in the teaching of these particular letters and sounds, and in all possible nonsense words to be generated from those sounds, except the ten to be used on the posttest. Before the final revision of the materials the criterion test for posttesting was devised and the nonsense words to be used were not included for drill in the materials.

RESULTS

The data will be reported in two ways. The first is that of criterion achievement; that is, reporting numbers and percentages of those who were

tutored who achieved criterion on each of the objectives on which they were tutored. To do this the following tables are presented summarizing the results for each subject who was tutored and for the controls. Following the tables is the summary of criterion achievement.

Also presented are the results of analysis of variance using a fixed hierarchal model. The problems associated with using an analysis of variance on this type of data are evident. The most obvious is the lack of distribution of scores on the pretests, especially in the kindergarten controls. The low upper limits on the possible scores also affect the statistical assumptions.

It is recognized that the results of the statistical analysis cannot be generalized from the particular school population which was used in the study, at least statistically. Such an analysis is attempted only because of the need for some to see levels of significance. For the purpose of the study, which is the determination of the comparative effectiveness of the two groups of adult tutors, the summary of criterion achievement appears to be much more informative and significant.

TABLE I

KINDERGARTEN - CONTROLS

	Pretest - # of errors			Posttest # of errors			Gain Score		
	Naming	Sounding	Decoding	Naming	Sounding	Decoding	Naming	Sounding	Decoding
Criterion	0/6	1/7	2/10	0/6	1/7	2/10			
S_1	5	7	10	4	7	10	1	0	0
S_2	6	7	10	5	7	10	1	0	0
S_3	6	7	10	6	7	10	0	0	0
S_4	6	7	10	6	7	10	0	0	0
S_5	3	7	10	2	6	10	1	1	0
S_6	4	7	10	4	6	10	0	1	0
S_7	6	7	10	6	7	10	0	0	0
S_8	6	7	10	4	6	10	2	1	0
S_9	6	7	10	4	6	10	2	1	0
S_{10}	6	7	10	6	6	10	0	1	0
Means	5.4	7	10	4.7	6.5	10	0.70	0.50	0.0

TABLE #2

KINDERGARTEN - PARENT TUTORS

	PRETEST - # of errors			POSTTEST - # of errors				Gain Scores			
	Naming	Sounding	Decoding	Naming	Sounding	Decoding		Naming	Sounding	Decoding	# of tutoring sessions
Criterion	0/6	1/7	2/10	0/6	1/7	2/10					
S_1	2	7	10	0	0	2	*	2	7	8	10
S_2	0	5	10	0	0	0	*	0	5	10	11
S_3	6	7	10	0	0	0	*	6	7	10	18
S_4	2	5	10	0	0	0	*	2	5	10	14
S_5	4	7	10	0	0	5		4	7	5	12
S_6	2	7	10	0	0	0	*	2	7	10	4
S_7	4	7	10	1	0	6	#	3	7	4	12
S_8	1	7	10	0	0	0	*	1	7	10	7
S_9	2	7	10	0	0	0	*	2	7	10	5
S_{10}	6	7	10	1	1	8		5	6	2	16
Means	2.9	6.6	10	.2	.1	2.1		2.7	6.5	7.9	10.9
					+ adjusted gain			2.7	6.5	9.13	

* Achieved mastery on each tutored element

Not tutored to mastery, or not tutored regularly

+ Includes only those tutored on the skill

TABLE #3

KINDERGARTEN - STUDENT TUTORS

	PRETEST # of errors			POSTTEST # of errors				Gain Scores			
	Naming	Sounding	Decoding	Naming	Sounding	Decoding		Naming	Sounding	Decoding	# of tutoring sessions
Criterion	0/6	1/7	2/10	0/6	1/7	2/10					
S_1	0	7	10	0	0	2	*	0	7	8	14
S_2	1	4	10	0	0	4		1	4	6	12
S_3	6	7	10	0	0	2	*	6	7	8	17
S_4	3	7	10	0	0	3	#	3	7	7	8
S_5	4	6	10	0	0	10	*	4	6	0	16
S_6	1	3	10	0	0	0	*	1	3	10	14
S_7	0	5	10	0	0	0	*	0	5	10	13
Means	2.14	5.57	10	0	0	3		2.14	5.57	7.0	13.4
				+ Adjusted gain				2.14	5.57	8.17	

* Achieved mastery for each part tutored on

Not tutored to mastery on individual parts; or not tutored regularly

+ Includes only those tutored on the skill

TABLE #4

FIRST GRADE - CONTROLS

	PRETEST # of errors			POSTTEST # of errors			Gain Score		
	Naming	Sounding	Decoding	Naming	Sounding	Decoding	Naming	Sounding	Decoding
Criterion	0/8	1/10	2/10	0/10	1/10	2/10			
S_1	1	4	10	0	3	10	1	1	0
S_2	0	4	10	0	2	5	0	2	5
S_3	2	10	10	0	5	10	2	5	0
S_4	0	10	10	0	6	10	0	4	0
S5	3	7	10	1	3	8	2	4	2
S_6	0	5	10	0	2	8	0	3	2
S_7	0	4	10	0	3	10	0	1	0
S_8	6	10	10	2	6	10	4	4	0
S_9	1	4	10	0	2	9	1	2	1
S_{10}	6	7	10	2	4	10	4	3	0
Means	1.9	6.5	10	0.5	3.6	9	1.40	2.90	1.0

TABLE #5

FIRST GRADE - PARENT TUTORS

	PRETEST # of errors			POSTTEST # of errors				Gain Score			
	Naming	Sounding	Decoding	Naming	Sounding	Decoding		Naming	Sounding	Decoding	# of tutoring sessions
Criterion	0/10	1/10	2/10	0/10	1/10	2/10					
S_1	5	7	10	0	4	10	#	5	3	0	10
S_2	0	4	10	0	0	2	*	0	4	8	11
S_3	1	5	7	0	1	3	#	1	4	4	12
S_4	4	10	10	0	0	2	*	4	10	8	20
S_5	0	4	8	0	0	0	*	0	4	8	8
S_6	4	5	10	1	5	8	#	3	0	2	3
S_7	3	5	10	0	0	1	*	3	5	9	13
S_8	0	8	10	0	1	9	*	0	7	1	5
S_9	0	6	10	0	0	0	*	0	6	10	7
S_{10}	1	4	10	1	2	4	#	0	2	6	3
Means	1.8	5.8	9.5	0.2	1.3	3.9		1.6	4.5	5.6	9.2
					+ Adjusted gain			1.6	5.0	7.83	

*Achieved mastery for each part tutored on.

#Not tutored to mastery on some elements or not tutored regularly.

+Adjusted, includes only those tutored on the skill.

TABLE #6

FIRST GRADE - STUDENT TUTORS

	PRETEST # of errors			POSTTEST # of errors				Gain Scores			
	Naming	Sounding	Decoding	Naming	Sounding	Decoding		Naming	Sounding	Decoding	# of tutoring Sessions
Criterion	0/10	1/10	2/10	0/10	1/10	2/10		0/10	1/10	2/10	
S_1	2	9	10	0	0	2	*	2	9	8	16
S_2	0	6	10	0	0	2	*	0	6	8	20
S_3	0	6	10	0	0	0	*	0	6	10	13
S_4	0	4	10	0	0	1	*	0	4	10	4
S_5	1	4	10	1	2	4		0	2	6	8
S_6	6	7	10	0	0	10	*	6	7	0	24
S_7	0	9	10	0	0	1	*	0	9	9	17
Means	1.28	6.42	7.0	.14	.28	2.8		1.14	6.14	7.29	14.6
						+ Adjusted gains		1.14	6.14	8.5	

* Achieved mastery for each part tutored on

Not tutored to mastery on some elements, or not tutored regularly

+ Includes only those tutored on the skill

Summary of Criterion Achievement

Kindergarten - Parent Tutors

Criterion Objectives	# Receiving Tutoring	# Achieving Criterion Who Received Tutoring	% Achieving Criterion Who Received Tutoring
Naming	10	8	80%
Sounding	10	10	100%
Decoding	8	7	87%

Kindergarten - Students

Naming	7	7	100%
Sounding	7	7	100%
Decoding	6	4	66%

Kindergarten - Total Tutors

Naming	17	15	88%
Sounding	17	17	100%
Decoding	14	11	78%

Kindergarten - Controls

Criterion Objective	# of Children	# Achieving Criterion	% Achieving Criterion	
Naming	10	0	0	
Sounding	10	0	0	
Decoding	10	0	0	

First Grade - Parent Tutors

Criterion Objectives	# Receiving Tutoring	# Achieving Criterion Who Received Tutoring	% Achieving Criterion Who Received Tutoring
Naming	10	8	80%
Sounding	8	7	87%
Decoding	6	5	83%

First Grade - Student Tutors

Naming	7	6	86%
Sounding	7	6	86%
Decoding	7	5	71%

First Grade - Total Tutors

Naming	17	14	82%
Sounding	15	13	87%
Decoding	13	10	77%

First Grade Controls

Criterion Objective	# of Children	# Achieving Criterion	% Achieving Criterion
Naming	10	7	70%
Sounding	10	0	0
Decoding	10	0	0

Statistical Data

To test the hypothesis that there is no significant difference between the mean gain scores of subjects not tutored, those tutored by parents, and those tutored by high school students, an analysis of variance using the fixed hierarchal model was performed. Because of the fact that not all children were tutored on the same skills, the analysis was provided on each of the three skills; naming, sounding, and decoding. Each of these will be reported separately.

NAMING

Hypothesis	F Score	DF	Score Required for .01 Significance
T_1=T_2= Control	1.88	2	> 5.08
Kindergarten= First Grade	1.24	3	> 4.22

The treatment score necessary for the .05 level of significance for the first comparison would be > 3.19, and > 2.80 for the second comparison. Therefore, the differences among the groups are not statistically significant, and the hypothesis of no difference between the groups cannot be rejected. Possible reasons for this will be discussed in the conclusions.

SOUNDING

Hypothesis	F Score	DF	Score Required for .01 Significance
T_1=T_2= Control	34.25	2	> 5.09
Kindergarten= First Grade	5.03	3	> 4.23

A multiple comparisons test was done to determine the source of the significant differences in the first comparison. The least significant difference test indicated differences significant at the .01 level between the control and the treatment groups, but no significant differences between children tutored by parents and those tutored by paid students.

DECODING

Hypothesis	F Score	DF	Score Required for .01 Significance
T_1=T_2= Controls	155.78	2	➤5.18
Kindergarten= First Grade	1.60	3	➤4.31

The least significant difference multiple comparison test indicated differences significant at the .01 level between the control and treatment groups, but no statistically significant difference between the treatment groups.

The hypothesis that there is no significant difference between tutored groups and non-tutored groups is not rejected for the naming of letters, but can be rejected at the .01 level of significance for the sounding of letters, and decoding nonsense words. The hypothesis that there is no difference between the kindergarten and first grade groups cannot be rejected for naming and decoding, but can be accepted for sounding at the .01 level of significance.

These results in sounding are qualified by two considerations. First, the probability of Type II error is high in all of this statistical analysis because of the tenuous assumptions about distribution. Secondly,

the kindergarten children had not been and are not being exposed to the teaching of sounds in school and so their possible gain scores were higher than those possible for the first graders. On blending and naming the school exposure is more constant, with both groups being exposed to naming and neither group being exposed to blending. In both of those areas the age factor made no significant difference.

The tutoring treatments resulted in statistically different results in the behaviors of sounding letters and decoding and not in the naming of letters. The lack of significance in the naming was not surprising because of the high entering behavior in comparison to the other two skills. Even in the kindergarten, where little formalized teaching had yet occurred in the naming of the letters, only 37% of the total sample had no ability to name any of the letters in the objective. In the first grade only 11% could name no letters, and 63% of them made fewer than three errors on the pretest, leaving them with a maximum possible gain score of three or less. In the kindergarten, 44% of the children made three errors or fewer.

Conclusions

In an earlier report of some data from this study, the feasibility of the materials and the achievement of specified criteria by the children was demonstrated. (Keele and Harrison, 1971) For this report it is sufficient to note that both the criterion data and the statistical data indicate that there are no significant achievement differences between children who are tutored by their parents and those who are tutored by another adult who is being paid for his services. In this case the other

tutors were high school students of an average age of 16.

Tutor logs maintained by all adults tutoring offered some indications of factors that might be considered in implementing an adult tutor program. One of the most common comments by parents was that their child seemed to very much enjoy the time alone with the parent (usually the mother, sometimes the father), and that the child was often the instigator of the tutoring session. About half of the parents whose children were tutored by paid students indicated that they felt that the student, as an "outsider," was probably able to be more patient with their child than the parent would have been. The anecdotal information generally indicates that, even though parents can effectively tutor their child in prerequisite reading skills, real world considerations such as time , inclination, and previous interaction patterns of parents dictate the provision of an alternate adult population of tutors. The study has indicated one possible group in determining the effectiveness of high school tutors. This age has advantages because of the possibility of hiring students who live within the same area as the children being tutored, because there are few jobs available for teenagers, and because they can generally be paid wages that are more consistent with what a family of moderate income can pay.

There were a total of six student tutors who never reported to the home to tutor the child they were assigned. Considering that the only basis for selection was availability of time and transportation, this was not an extremely high mortality rate. It is suggested that with stronger emphasis upon selection of dependable and conscientious young people, that management problems of this sort would not exist.

This study indicated that, at least for the population studied, structured tutoring by adult tutors is an effective avenue for providing reading readiness skills for kindergarten children and remedial work for first grade children who have not mastered important prerequisites. The results indicate the validity of the tutor manual for adults, and that there are no significant differences between the effectiveness of parents as tutors and high school students as tutors. Further research comparing other types of adult tutors and other types of tasks would be helpful in determining the role of non-professionals in aiding the school.

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